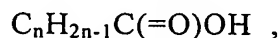


Claims

1. A method for preparing metal salts of unsaturated, short-chain carboxylic acids by reaction

- 5 - of metal-alcoholate compounds
- with carboxylic acids of the general formula

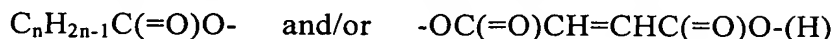


wherein the double bond is in 2- or 3-position and

n represents 2, 3, 4, 5, or 6 and/or maleic acid

- 10 - in the presence of oxygen (O₂), which is continuously fed so that its concentration in the reaction solution is at least 50 %, and

the metal salts have at least one group of the formula



and the following metals or mixtures thereof

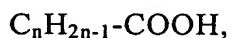
15 Al, Si, Sn, La, Zr, Cu and/or Zn.

2. The method of claim 1,
characterized in that oxygen is continuously fed so that the reaction
solution is at least 90 % oxygen-saturated.

- 20 3. The method of claim 1 or 2,
characterized in that the metal salts have the general formula



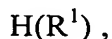
and can be obtained by reaction of a linear or branched, unsaturated
25 carboxylic acid of the formula



wherein **n** represents 2, 3, 4, 5, or 6 with the double bond in 2- or 3-position,
preferably in 2-position, with a metal compound of the general formula



30 and, optionally,



wherein

a is at least 1,

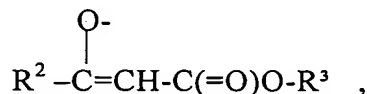
b is 0, 1, 2 or 3 and

35 **(a+b)** and **c** are independently of one another an integer of 2 to 4,

M is the metal of claim 1,

R¹ represents an alcoholate group having a C₁ - to C₆ hydrocarbons residue, wherein **R¹** is a saturated, linear or branched alcoholate group, which can be obtained from an alcohol having at least one -OH group, wherein the -OH groups are preferably primary or secondary -OH groups,

or



wherein **R²** and respectively **R³** represent -CH₃, -C₂H₅, -C₃H₇ or -C₄H₉

and **n**, **R¹**, **R²**, and **R³** may be different for each **a**, **b**, and **c** and

at least one **R¹** in **M(R¹)_c** represents an alcoholate group having a C₁ - to C₆ hydrocarbons residue.

4. A method according to any one of the preceding claims, characterized in that the reaction is carried out in the presence of continuously fed oxygen in a gas mixture containing the oxygen in a concentration from 5 to 30, preferably 15 to 25 vol%.
5. A method according to any one of the preceding claims, characterized in that the reaction is carried out at temperatures from 0 to 150 °C, preferably 20 to 100 °C.
6. A method according to any one of the preceding claims, characterized in that the reaction is carried out at pressures from 2 bar_{abs} to 0.01 bar_{abs}.
7. A method according to any one of the preceding claims, characterized in that the reaction is carried out without a solvent.
8. A method according to any one of claims 1 through 5, characterized in that the reaction is carried out in at least one of the following solvents: hydrocarbons, esters, ethers, glycols, and glycol mono- or diethers.
9. A method according to any one of the preceding claims, characterized in that the carboxylic acid is acrylic acid or methacrylic acid.

- Line 1
10. A method according to ~~any one of the preceding claims~~,
characterized in that the metal **M** is Al, Si, Sn, La, Zr, or Cu,
particularly aluminium and/or zirconium, preferably aluminium.
 - 5 11. A method according to any one of the preceding claims,
characterized in that the metal compound is a metal alcoholate.
 12. A method according to any one of the preceding claims,
characterized in that the reaction is carried out in the absence of water
10 (less than 100 ppm).
 13. The use of metal salts, which can be prepared according to any one of claims
1 to 12 and have at least one unsaturated carboxyl group with 3 to 7 carbon
atoms in the carboxyl group or the reaction products thereof as or in coatings,
15 particularly as an additive for improving hardness and/or adhesion and in
rubbers.
 14. The use of metal salts, which can be prepared according to any one of claims
1 to 12 as coating materials or in coatings materials for leather, glass,
20 ceramics, paper, cardboard, plastics, metals, and textiles.
 15. The use of metal salts, which can be prepared according to any one of claims
1 and/or 3 to 12 and have at least one unsaturated carboxyl group with 3 to 7
carbon atoms in the carboxyl group as a monomer, particularly a co-monomer
25 in polymerizations, especially radical and/or photoinitiated polymerizations.
 16. The use of metal salts, which can be prepared according to any one of claims
1 to 12 and have at least one unsaturated carboxyl group with 3 to 7 carbon
atoms in the carboxyl group as an additive in radiation-curing adhesives- or
30 plastics compositions, particularly UV-curing ones, each of which furthermore
containing particularly photoinitiators, particularly UV initiators.
 17. The use of metal salts, which can be prepared according to any one of claims
1 to 12 and have at least one unsaturated carboxyl group with 3 to 7 carbon
atoms in the carboxyl group in printing-ink compositions, particularly as a
35 radiation-curing monomer.

18. The use of metal salts, which can be prepared according to any one of claims 1 to 12 and have at least one unsaturated carboxyl group with 3 to 7 carbon atoms in the carboxyl group or the reaction products thereof as a rheology modifier, particularly in printing-ink resins.

19. The use of metal salts, which can be prepared according to any one of claims 1 to 12 and have at least one unsaturated carboxyl group with 3 to 7 carbon atoms in the carboxyl group or the reaction products thereof as or in barrier coatings for foils preventing permeation of oxygen and/or water.

20. The use of the metal salts, which can be prepared according to any one of claims 1 to 12, according to at least one of claims 13 to 19, characterized in that the employed used compositions containing said metal salts additionally contain

- 1 to 5 wt.% photoinitiators, particularly aromatic ketones, optionally alkylated and/or alkoxyated ones, preferably with C₁- to C₄ alkyl- and/or alkoxyate groups, and/or
- 0.05 to 2 wt.% UV- and/or radical stabilizers, particularly alkylated and/or alkoxyated hydroxy aromatics, preferably phenols and independently thereof having C₁- to C₄ alkyl- and/or alkoxyate groups.